

## CLAIMS

What is claimed is:

- 1           1. A method comprising maintaining a single mapping for one or more  
2   active channels associated with a single network identifier.
  
- 1           2. The method of claim 1 further comprising associating with a wireless  
2   network using the mapping for one of the active channels associated with a  
3   selected network identifier, and  
4           wherein the method is performed by a communication unit to reduce scan  
5   time in a wireless local area network, and wherein the maintaining the mapping  
6   is performed by driver circuitry, and the associating is performed by network-  
7   interface circuitry tuning to the one of the active channels in response to the  
8   mapping, the mapping comprising one of either a bitmap, an array, a linked list,  
9   or a hash table that is to be provided by an operating system.
  
- 1           3. The method of claim 1 further comprising scanning for active channels  
2   to determine network identifiers associated with the active channels, and wherein  
3   the maintaining comprises:  
4           generating one or more single bitmaps for the active channels associated  
5   with single network identifiers; and  
6           storing the bitmaps in a bitmap table.
  
- 1           4. The method of claim 1 further comprising:  
2           scanning predetermined channels to identify network identifiers  
3   associated with active of the predetermined channels; and  
4           generating a bitmap for the active channels and their associated network  
5   identifiers,  
6           wherein the predetermined channels are predetermined for a geographic  
7   location.

1           5. The method of claim 2 wherein the associating comprises sending an  
2 association request on a channel associated with a selected network identifier  
3 through an access point, wherein a network associated with the selected network  
4 identifier authenticates the communication unit in response to the association  
5 request.

1           6. The method of claim 5 wherein the associating further comprises:  
2 sending the selected network identifier to the network-interface circuitry;  
3 retrieving the bitmap associated with the selected network identifier by  
4 the driver circuitry;  
5 tuning, in response to the bitmap, to a channel for sending the association  
6 request; and  
7 sending the association request to the access point over a wireless link  
8 using an antenna.

1           7. The method of claim 1 further comprising passively scanning channels,  
2 and waiting for receipt of a beacon frame, the beacon frame including the  
3 network identifier associated with one of the scanned channels.

1           8. The method of claim 1 further comprising passively scanning channels  
2 by receiving a probe response directed to another communication unit on one of  
3 the channels.

1           9. The method of claim 7 wherein the scanning further comprising active  
2 scanning and includes for predetermined channels,  
3 transmitting a probe request on at least one of the predetermined  
4 channels; and  
5 waiting to receive a probe response from an access point, the probe  
6 response including the network identifier associated with an active channel.

1           10. The method of claim 9 wherein the predetermined channels are  
2 independent basic service set channels for a geographic location.

1           11. The method of claim 10 further comprising repeating the transmitting  
2 the probe request sequentially for other channels of the independent basic service  
3 set to determine network identifiers for active channels of the independent basic  
4 service set.

1           12. A communication unit comprising:  
2 network-interface circuitry to maintain a single mapping for one or more  
3 active channels associated with a single network identifier; and  
4 transceiver circuitry to tune to one of the active channels using the  
5 mapping to allow the communication unit to either associate or reassociate with  
6 a wireless network having the associated network identifier,  
7 wherein the mapping comprises one of either a bitmap, an array, a linked  
8 list, or a hash table.

1           13. The communication unit of claim 12 wherein the network-interface  
2 circuitry includes driver circuitry to maintain a bitmap table for the active  
3 channels,  
4 wherein the driver circuitry to generate bitmaps for the active channels  
5 and to store the bitmaps in the bitmap table, the table to associate the bitmaps  
6 and network identifiers for the active channels.

1           14. The communication unit of claim 12 further comprising an operating  
2 system, wherein the operating system in conjunction with the network-interface  
3 circuitry to scan predetermined channels to identify network identifiers  
4 associated with active of the predetermined channels, and the driver circuitry to  
5 generate single bitmaps for one or more active channels and their associated  
6 network identifiers.

1           15. The communication unit of claim 14 wherein as part of associating,  
2 the transceiver circuitry to send an association request on a channel associated  
3 with a selected network identifier through an access point, wherein a network  
4 associated with the selected network identifier to authenticate the  
5 communication unit in response to the association request.

1           16. The communication unit of claim 15 wherein the operating system to  
2 send a selected network identifier to the network-interface circuitry, and the  
3 network-interface circuitry to retrieve the bitmap associated with the network  
4 identifier and to provide the bitmap to the transceiver circuitry, and the  
5 transceiver circuitry to tune to a channel for sending the association request and  
6 to send the association request to the access point over a wireless link using an  
7 antenna.

1           17. The communication unit of claim 14 wherein the operating system in  
2 conjunction with the network-interface circuitry to passively scan channels by  
3 waiting for receipt of a beacon frame, the beacon frame including the network  
4 identifier associated with a channel.

1           18. The communication unit of claim 17 wherein the operating system in  
2 conjunction with the network-interface circuitry to perform an active scan of  
3 predetermined channels, the active scan to include a transmission of a probe  
4 request on at least one of the predetermined channels, and to wait to receive a  
5 probe-response frame from an access point, the probe response to include the  
6 network identifier associated with an active channel, the probe-response frame to  
7 be directed either to the communication unit or another communication unit.

1           19. A system comprising:  
2 an omnidirectional antenna to communicate with an access point;  
3 network-interface circuitry to maintain a mapping for active channels and  
4 associated network identifiers; and  
5 transceiver circuitry coupled to the antenna to tune to one of the active  
6 channels using the mapping for the active channel to allow either an association  
7 or a reassociation with a wireless network having a selected network identifier,  
8 wherein the mapping comprises one of either a bitmap, an array, a linked  
9 list, or a hash table.

1           20. The system of claim 19 wherein the network-interface circuitry  
2 includes driver circuitry to maintain a bitmap table for the active channels,  
3 wherein the driver circuitry to generate the bitmaps for the active channels and to  
4 store the bitmaps in the bitmap table, the table associating the bitmaps and  
5 network identifiers for the active channels.

1           21. The system of claim 20 further comprising an operating system,  
2 wherein the operating system in conjunction with the network-interface circuitry  
3 scans predetermined channels to identify network identifiers associated with  
4 active of the predetermined channels, and  
5           wherein the driver circuitry to generate a bitmap for the active channels  
6 and an associated network identifier.

1           22. A method comprising:  
2           identifying valid channels for a geographic region in which a  
3 communication unit is located;  
4           transmitting a probe request on a predetermined subset of the identified  
5 valid channels; and  
6           waiting for receipt of either a beacon frame or a probe-response frame on  
7 channels of the identified valid channels other than the channels of the  
8 predetermined subset, the probe-response frame being directed to another  
9 communication unit.

1           23. The method of claim 22 wherein the transmitting the probe request is  
2 performed for channels of the predetermined subset identified a channel mapping  
3 stored in the communication unit, the mapping comprising one of either a  
4 bitmap, an array, a linked list, or a hash table.

1           24. The method of claim 23 wherein for channels of the predetermined  
2 subset, the method comprises waiting, in response to transmission of the probe  
3 request, for a probe-response frame directed to the communication unit, the  
4 probe-response frame including a network identifier.

1           25. The method of claim 24 further comprising:  
2           generating bitmaps valid channels for which a probe-response frame or  
3 beacon-frame is received; and  
4           re-associating with a network using at least one of the bitmaps.

1           26. The method of claim 22 wherein at lease one of the transmitting and  
2 the waiting is performed sequentially for each of the identified valid channels.

1           27. A machine-readable medium that provides instructions, which when  
2 executed by one or more processors, cause said set of processors to perform  
3 operations comprising reducing scan time in a wireless-networking environment  
4 and include maintaining a single bitmap for one or more active channels  
5 associated a single network identifier.

1           28. The machine-readable medium of claim 27 wherein the instructions,  
2 when further executed by the one or more processors, perform operations further  
3 comprising associating with a wireless network using the bitmap for one of the  
4 active channels associated with a selected network identifier.

1           29. The machine-readable medium of claim 28 wherein the instructions,  
2 when further executed by the one or more processors, perform operations further  
3 comprising:  
4           scanning for active channels to determine network identifiers associated  
5 with the active channels:  
6           generating the bitmaps for the active channels; and  
7           storing the bitmaps in a bitmap table, the table associating the bitmaps  
8 and network identifiers for the active channels.

1           30. The machine-readable medium of claim 29 wherein the instructions,  
2 when further executed by the one or more processors perform operations further  
3 comprising sending an association request on a channel associated with a  
4 selected network identifier through an access point, wherein a network

- 5 associated with the selected network identifier authenticates a communication
- 6 unit in response to the association request.